

TRACE ELEMENT AND STABLE ISOTOPE PROFILES FROM THE CORALLINE SPONGE (*ASTROSCLERA WILLEYANA*). *Memoirs of the Queensland Museum* 44: 174. 1999- Techniques developed for laser-ablation-ICP-MS analysis of corals have now been utilised for the analysis of trace elements in the coralline sponge *Astrosclera willeyana*. In scleractinian corals the elements B, Mg, Sr, Ba and U show seasonal variations consistent with environmental parameters, predominantly sea surface temperature and variations in upwelling. We report here a preliminary investigation to determine whether elemental distributions in sclerosponges will provide meaningful proxy information about past oceanographic conditions.

Samples from Taveuni, Fiji, Ruby Reef, GBR and Truk, Caroline Islands have been analysed at a sampling resolution of $\sim 40\mu\text{m}$. With current techniques and data reduction methods, sampling at this resolution produces too much variation to show any elemental correlations. When samples are filtered to $\sim 100\mu\text{m}$ resolution, longer-term (annual to several year) patterns appear, which are consistent between the B/Ca,

Mg/Ca, Sr/Ca and Ba/Ca cycles. This suggests a common incorporation mechanism between these four elements. If this variation is temperature related, the method of incorporation is markedly different than corals. The boron, magnesium and barium concentrations in sclerosponges are 2-5 times lower than in corals, with concentrations of $\sim 20\text{ppm}$, $\sim 200\text{ppm}$ and $\sim 4\text{ppm}$, respectively. The strontium and uranium concentrations are 1-2.5 times higher than in corals with concentrations of $\sim 9000\text{ppm}$ and $\sim 7\text{ppm}$ respectively. We will also present preliminary stable isotope data ($\delta^{18}\text{O}$ and $\delta^{13}\text{C}$) to compare with the trace element profiles. □ *Porifera, Astrosclera, Sr/Ca, Mg/Ca, Ba/Ca, laser ablation, ICP-MS, $\delta^{18}\text{O}$, $\delta^{13}\text{C}$, environmental parameters.*

Stewart J. Fallon (email: Stewart.Fallon@amu.edu.au) & Malcolm T. McCulloch, Research School of Earth Sciences, Australian National University, Canberra 0200, Australia; John N.A. Hooper, Queensland Museum, PO Box 3300, South Brisbane, Qld, 4101, Australia; 1 June 1998.